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ANTHELMINTIC ACTIVITY OF SESQUITERPENE LACTONES FROM FORAGE CHICORY AGAINST *ASCARIS SUUM*

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Introduction

New control options for parasitic nematodes are needed due to the threat of drug resistance and consumer demand for organic animal products. Chicory is a nutritious forage that can be used for grazing outdoor-reared pigs and ruminants and may have anthelmintic effects, potentially due to high concentrations of sesquiterpene lactones (SL). Here, we investigated the effects of SL extracts from chicory on *in vitro* survival and glutathione-S-transferase (GST) activity of the highly prevalent pig parasite *Ascaris suum*.

Materials and Methods

Chicory leaves from two cultivars (Spadona and Puna II) were extracted with methanol and SL purified by solid-phase extraction. UPLC-MS was used for analysis of the extracts. *A. suum* third-stage larvae (L3) were produced by *in vitro* hatching of eggs, whilst L4 were isolated from the gut of infected pigs. Native *A. suum* GST protein was purified and activity was assessed by the CNDB assay.

Results

Incubation in the SL extracts dramatically reduced the *in vitro* survival of *A. suum* L3 and L4. However, the effect was cultivar-dependent, with Spadona extracts more potent than Puna II, consistent with distinct SL profiles observed between cultivars. Spadona-SL also strongly inhibited the activity of *A. suum* GST, suggesting that the anthelmintic mechanism may involve accumulation of toxic reactive oxygen.

Conclusion

If the observed anthelmintic effects are confirmed *in vivo*, chicory has potential to be used as an alternative control for *A. suum* in outdoor pigs, although selection of appropriate cultivars will be important. On-going experiments are investigating the mechanism(s) of anthelmintic action.